

Report Summary

- **Goal: effective interaction**
- **Challenge: networked/mobile system**
- **Approach: middleware**
- **Issues:**
 - commercial middleware will not
address DoD's needs
both a systems & HCI problem**

Addressing the Challenges

- **Challenges**
 - **HCI reconfiguration on-the-fly**
 - **scaleable, adaptable plug-and-play**
- **Novel Approaches**
 - **architecture w/dynamic negotiation**
 - **based on user situation & available interaction resources (e.g. display)**

Projected Outcome

- **New Capabilities**
 - **rapid creation of useful systems**
 - **drastically reduce training time**
 - **smaller, more effective forces**
- **1-time development & training for ...**
 - **command center, command vehicles, wearable devices in field**

Investment Strategy

- **Existing COTS Middleware**
 - CORBA, Active-X, JAVA, etc
 - Does not address scalability, reliability, security, interaction variability, interoperability
 - limited solutions, at best
 - DARPA must address DoD needs

If DARPA Doesn't Do This...

- **40% of code is middleware: glue+ glue+glue->glop**
- **commercial world: “plug & pray”**
- **our forces in 2020 could have 1996 effectiveness**
- **decrease in efficiency, increase in cost as systems scale up**

Fundamental Issues

- **flexible & scaleable: not point solutions**
- **architecture that adapts seamlessly to user's immediate situation**
- **integrating speech and other modalities wo/rebuilding functionality**
- **finding the right component sizes**